UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,439	04/07/2003	Dennis Pai	2011095	1347

7590 09/19/2005

PRO-TECHTOR INTERNATIONAL
20775 Norada Court
Saratoga, CA 95070-3018

EXAMINER	
ABOAGYE, MICHAEL	
ART UNIT	**PAPER NUMBER**
1725	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,439	PAI, DENNIS	
	Examiner	Art Unit	
	Michael Aboagye	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 April 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of Heim et al. (US Patent no. 5735450). AAPA teaches a printed circuit board, having a first surface and a second surface, with an image sensor welded to said first surface.

AAPA does not teach method for removing an image sensor from a printed circuit board, distributing hot air stream over a periphery of the image sensor to melt solder and supplying a heater to heat the second surface of the printed circuit board to raise the temperature of the second surface of the printed circuit.

However Heim et al. teaches a method of desoldering an electronic module attached to a circuit board; said circuit board having first surface and a second surface;

said electronic module welded to the said first surface of the circuit board and a method comprising the steps of: supplying a hot air stream to the first surface of said circuit board so as to distribute the hot air stream over a perimeter of the electronic module and to melt solder; and providing a heater to heat the second surface of the circuit board and to raise a temperature of the second surface of the circuit board to provide uniform temperature distribution across the contact sites of the module and card (see, figure 1 and column 2, line 4 – column 3, line 67); a heater capable of being customized by a temperature controller to provide heat input greater than 80 °C; wherein the temperature of the hot gas stream reaches up to temperature of about 220 °C at which solder is capable of reflow; providing uniform temperature distribution across the image sensor and the printed circuit board and detach the image sensor from the circuit board (see column 4 line 52 – column 5, line 67; and column 6, lines 10 -50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used hot air to heat the first surface and a heater to heat the second surface of the image sensor, printed circuit board assembly of AAPA in view of Heim et al. in order to provide uniform temperature distribution across the image sensor and the printed circuit board and detach the image sensor from the circuit board (Heim et al., abstract, and column 6, lines 10 – 50).

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heim et al. (US Patent no. 5735450) in view of applicant's admitted prior art (AAPA).

Heim et al. teaches a method of desoldering an electronic module attached to a circuit board; said circuit board having first surface and a second surface; said electronic module welded to the said first surface of the circuit board and a method comprising the steps of: supplying a hot air stream to the first surface of said circuit board so as to distribute the hot air stream over a perimeter of the electronic module and to melt solder; and providing a heater to heat the second surface of the circuit board and to raise a temperature of the second surface of the circuit board to provide uniform temperature distribution across the contact sites of the module and card(see, figure 1 and column 2, line 4 – column 3, line 67); a heater capable of being customized by a temperature controller to provide heat input greater than 80 °C; wherein the temperature of the hot gas stream reaches up to temperature of about 220 °C at which solder is capable of reflow; providing uniform temperature distribution across the image sensor and the printed circuit board and detach the image sensor from the circuit board (see column 4 line 52 – column 5, line 67; and column 6, lines 10 - 50).

Heim at al does not disclose an image sensor welded to a printed circuit board. However applicant's admitted prior art (AAPA) teaches a printed circuit board, having a first surface and a second surface, with an image sensor welded to said first surface.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Heim et al. with an image sensor in view of the teaching of AAPA, in order to enable easy removal of the of said image sensor from the printed circuit board, wherein the image sensor will not be treated as a waste, thus minimize manufacturing cost (applicant's specification, page 2, lines 5 –11).

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of Hiroshi et al. (JP 63-31833; insofar as a definite without a complete translation of the Japanese document)

AAPA teaches a printed circuit board, having a first surface and a second surface, with an image sensor welded to said first surface.

AAPA does not teach method for removing an image sensor from a printed circuit board, distributing hot air stream over a periphery of the image sensor to melt solder and supplying a heater to heat the second surface of the printed circuit board to raise the temperature of the second surface of the printed circuit.

However Hiroshi et al. teaches a method of detaching an electronic circuit element bonded to a substrate; comprising heating said electronic element by heat conduction from a heater block which comes in contact with the upper surface of an element and at the same time, hot air is allowed to flow into the part between the element and a circuit substrate through the hot air paths and provided in the heater block; heating the solder flip chip bonding part of the element, said hot air goes up along the shielding wall on the opposite side of the element, and discharged to outside; enabling said solder to fuse reliably in a short period by both heating by heat conduction of the heater block and the heat of hot air, wherein the range of hot air flowing on the circuit substrate can be localized (see abstract and figures) .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used hot air to heat the first surface and a heating block to

heat the second surface of the image sensor, printed circuit board assembly of AAPA in view of Hiroshi et al. in order to reliably fuse the welded connection in a short time and also provide a hot air flow which can be localized to the bonded area, to enable easy removal of the image sensor from the printed circuit board (Hiroshi et al. abstract).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lasto et al (US 5419481), Hsiao (US 6301436) and Kimura et al. (US 6739045) are cited of interest for illustrating the state of the art in soldering/ desoldering of an electronic or imaging elements from substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Aboagye
Assistant Examiner
Art unit 1725
9/13/2005

AM
AM

KEVIN KERNS
PRIMARY EXAMINER
Kevin Kerns 9/13/05